OUR BOOKSHELF.

Interpretations and Forecasts: a Study of Survivals and Tendencies in Contemporary Society. By Victor Branford. Pp. v+411. (London: Duckworth and Co., 1914.) Price 7*s*. 6*d*. net.

"THE city," said Aristotle, "exists for the sake of the good life." But only by the good life is the ideal city, the perfect state, to be realised. In other words, social organisation is necessary for individual achievement, but individual achievement reacts creatively upon the social organisation. Mr. Victor Branford, one of the founders of the Sociological Society, has with his spiritual father, Prof. Geddes, done much to illustrate this essential interaction, and still more to infuse a sense of enthusiasm into our appreciation of it. He shows in these lectures the spirit of the medieval guildsmen, who knew themselves to be citizens of no mean city. On their work and ideals he writes a delightful and instructive essay.

The text of the whole book is Aristotle's theory of the city. The author well shows how, as a result of the statecraft of the Renascence and subsequent centuries, a "capital literary fraud" was perpetrated upon that theory. Aristotle saw the city as "a process in which four types of social operation tended to co-adjustment. He saw the Labour of the People, who maintain the outer life of the city; he observed the Public Functions of the citizens, who direct the polity of the city; he perceived the Meditations of Philosophers, who study and compare the polities of cities in order to discover the ideal polity; he recognised the Efforts of Teachers to educate for citizenship. In proportion as all these—the four natural elements of civic life—work together harmoniously, the city comes into being and creates for its citizens the conditions of the good life." The fraud perpetrated upon this theory is the substitution of "state" for "city"; "politician" for "citizen"; "constitution" for "polity"; "political" for "civic"; and "for the science and art of Civics they have substituted Politics." A reaction towards the original and sounder view is to be seen in the decentralising movement of to-day. The author is familiar with the life both of North and South America, and his comparisons of the working of a new spirit in the western republics and in European countries are marked by insight. The place of education in developing the ideal and therefore most efficient relation between man and society, in its most practical because closest and best realisable form, the city, is very fully worked out.

The book is an eloquent example of the practical application of sociological theory.

A. E. CRAWLEY.

The Country Month by Month. By J. A. Owen and Prof. G. S. Boulger. Pp. x+492. (London: Duckworth and Co., 1914.) Price 6*s*. net.

TWENTY years ago Mrs. Owen, better known, perhaps, by her works under the signature "A Son of the Marshes," prepared, with Prof. Boulger, a series of twelve volumes in which the natural characteristics of the country month by month were described. The series was published in a single volume in 1901, and was given an appreciative notice in these columns (vol. lxv., p. 125). The late Lord Lilford sent the authors a number of valuable notes which were added to the original work, and are also included in the present volume. The new edition has been revised, and is embellished with twelve coloured plates and twenty halftone plates reproduced from photographs. The result is a very attractive book on popular natural history. Many similar books have been published in recent years, but for pleasantly-written description of country life, interesting alike to the general reader and the working naturalist, this volume is among the best. In its present form the book should be acceptable to a wide circle of readers.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Migration Routes.

ON November 27, 1913, NATURE published a letter from me in which the suggestion was made that birds when migrating may find it advantageous to follow coast lines or rivers, because of the up-air currents produced by the difference of temperature of the surface of the land and water.

Mr. McLean has recently flown up the Nile, and he tells me that the vertical air currents were frequently very marked. When the wind was only slightly different in direction from the line of the river there was a down current on the side from which the wind came and an up current on the other side. When, however, the river split up into several channels the air was generally descending over the whole neighbourhood and was disturbed. These down currents were at times so strong that his aeroplane when climbing at its greatest speed would descend steadily at 3 ft. per second. He estimates that the maximum rate of climbing of his machine in still air was 4 ft. per second. This observation is of great interest as showing that a down current may exist of about the velocity of 4·8 miles per hour.

HORACE DARWIN.

The Orchard, Cambridge, June 8.

Aeroplane Wings.

IN connection with the apparently growing practice of constructing the wings of aeroplanes so that their inclination can be modified (a scheme which I recommended in the first edition of my book, "The Problem of Flight," published in April, 1907), may I direct attention to my paper read at the Dundee meeting of the British Association in 1912? Therein I referred to the fact that the propeller axis (to which the inclination is, or should be, referred) does not run horizontal so that the propeller thrust has a vertical component. The use of a mechanism by which the wing inclination can be varied enables this vertical component to be annulled, *i.e.* the propeller axis can be kept horizontal, thus greatly increasing the efficiency.

With reference to the question of acceleration in the air and its effect on the reactions, which was discussed some time ago in NATURE in connection with Mr. Walkden's book, a recent paper of mine in *Flight* on oscillating wings may be of interest. It was shown therein that if the reactions during oscillation of the

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air current vary as the square of the relative velocity, the mean reaction is greater than that due to the mean velocity considered as steady.

Herbert Chatley.

Chinese Government Engineering College,
Tangshan, North China, May 24.

Weather Forecasts in England.

Mr. Mallock, in giving his reasons for believing that correct weather forecasts are not likely to be possible even for twenty-four hours in advance, touches upon many very debatable meteorological theories.

His diagram purporting to show the surface wind currents for an earth, the surface of which is level and uniform, requires for its prediction a much better knowledge of the actual cause of wind distribution than we possess at present. Indeed, at the present time, it would appear that the wind conditions he shows are more nearly those of the northern than the southern hemisphere, and rather are the result of the irregular distribution of land, sea, and mountain than to uniform surface conditions. In the southern hemisphere the conditions, as near the equator, approximate more to belt than to cyclonic conditions.

An inspection of the daily weather charts issued by the Meteorological Office will also show that the general directions of the winds over the northern hemisphere are by no means as Mr. Mallock shows. A cyclone is a much more complex affair than the whirls of his figure. Cyclones are generally rather the result of the common action of several winds moving in different directions. Not only is this the case, but we have no accepted theory as to the cause of cyclones and the source from which they derive their energy.

If it were a simple matter of the passage and rapid appearance and disappearance of cyclones, as Mr. Mallock supposes, I take it that the weather conditions would be rapid alternations of sunshine, cloud, and rain. But such is not the case. We have long periods of fine weather, long periods of wet, unsettled weather, and spells of heat and cold. We must recognise the fact that on the earth we have regions where the weather conditions vary regularly with the seasons, and we also have insular and oceanic weather conditions. The boundaries of these areas are not always the same. The one is apt to encroach upon the other, and it is probable that by obtaining a knowledge of such general movements, weather forecasting for considerable periods of time will be possible.

So long as the old ideas of cyclones and anticyclones held sway, weather predicting really seemed hopeless; but fortunately we find that these old theories, though expressing important truths, require considerable modification in detail. Mr. Mallock's contention that useful forecasting will never be possible seems premature in face of the fact that there are so many things taking place in weather changes the theoretical reasons for which are unknown.

With improved weather charts will come a better knowledge of the theory of cyclones and anticyclones. However, it may never be possible to predict, from the to-be-discovered laws of the winds, the course of weather changes with the certainty the movements of the members of the planetary system can be predicted by the application of Newton's laws.

R. M. Deeley.

Abbeyfield, Salisbury Avenue, Harpenden.

The Thunderstorm of June 14, at Dulwich.

My observations on the thunderstorm of Sunday, June 14, at Dulwich, may perhaps be of interest.

Thunder was first heard a little before 12.30 p.m., and lightning was seen from about 12.45. These continued more or less throughout the afternoon until quite 5 o'clock, the lightning being very brilliant and rather frequent. Heavy rain fell from 12.50 until 1.10, and from 1.15 to about 2.20. Some white hail fell about 1.45.

At 2 p.m. there was a heavy fall of big hailstones as large as marbles, which lasted about five minutes. Many of these hailstones were like large acid tablets, about an inch long, half an inch broad, and more than a quarter of an inch thick. The hailstones were composed of perfectly clear ice, and did not contain any white opaque substance. Hailstorms are usually accompanied by gusts or squalls of wind; in this storm, however, there was but little wind.

When the big hailstones fell the leaves were torn off the trees, and so the pavements immediately beneath them became quite green with the fallen leaves. The heavy rain, however, quickly washed these away, so that they were carried into the gutters and soon stopped up the drains, with the result that the roads were flooded.

A minute or two after the big hailstones had fallen, a mist arose above the roads and pavements to a height of about 4 ft. This clearly showed how the fogs were formed near the Banks of Newfoundland owing to the mixing of the cold and warm sea current.

Rain came on again about 3.15, and continued until 4 p.m.

It was not able to get to my rain-gauge in Alleyn Park until after 5 o'clock, as the lawn was flooded and the water had not subsided sufficiently for me to get into the garden. I found the rainfall to be 2·15 in., and of this amount I believe that about 1·60 to 1·75 in. must have fallen in three-quarters of an hour, from 1.30 p.m. to 2.15 p.m.

Wm. Marriott.

Royal Meteorological Society, 70 Victoria Street,
London, S.W., June 16.

A Dual Phenomenon with X-Radiation.

Since our paper on the "X-Rays and Concentration," and our exhibition of models and negatives at the annual general meeting of the Röntgen Society on June 9, we have obtained further results which favour the hypotheses then suggested.

For instance, if a radiograph be taken at any incidence (except 0° and 90°) of a ring of rectangular cross-section made in ebonite, its circular edges will be distinctly visible as black and white *semi-circles*. These alternate for the top and bottom outer rings, and they are in the reverse order for the inner circles. These differences were predicted from the generalisation we gave in the paper. We think it would be advantageous to repeat the conclusion of the paper for those who were not present at the exhibition:—

"Generalising our results, it would seem that when X-rays are incident (or emergent) simultaneously upon two surfaces having a common boundary, this will be marked by a white or black band according as the dihedral angle of the solid is greater or less than 180°. If, however, the rays are incident upon one of the surfaces only, and emergent from the other, the order is reversed. In the third case, where the rays are incident upon one surface but parallel to the other (as with single laminæ) the two bands appear in close association, and are observable with difficulty without the aid of suitable magnification." Tangential radiation has given a black or white band according as the surface was convex or concave.

I. G. Rankin.
W. F. D. Chambers.

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